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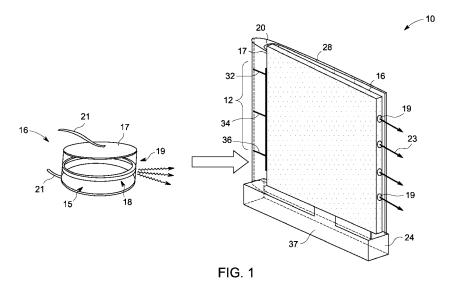
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(54) Thermal management system and method

(57) A thermal management system is provided. The thermal management system includes at least one heat sink including one or more respective fins, wherein the one or more fins include one or more respective cavities. The thermal management system also includes a syn-

thetic jet stack including at least one synthetic jet mounted within each of the respective cavities employing at least one engaging structure to provide a rigid positioning of the synthetic jet stack within the fins, wherein the synthetic jet includes at least one orifice through which a fluid is ejected.



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EUROPEAN SEARCH REPORT

Application Number EP 11 18 6013

	DOCUMENTS CONSID	ERED TO BE RELEVANT			
Category	Citation of document with ir of relevant pass	ndication, where appropriate, ages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)	
Х	EP 2 239 775 A2 (GE 13 October 2010 (20 * paragraphs [0019] [0026] - [0028]; fi	10-10-13) , [0020], [0023],	1,2,10,	INV. H01L23/467 H05K7/20	
X,P	AL) 22 February 201	NSON ROBERT J [US] ET 1 (2011-02-22) 8 - line 45; figure 12	1,10		
А	EP 0 385 090 A1 (MI COMPUTER [US]) 5 September 1990 (1 * column 3, line 8		1,10		
				TECHNICAL FIELDS	
				SEARCHED (IPC)	
				H01L H05K	
	The present search report has l	·			
	Place of search	Date of completion of the search		Examiner	
	The Hague	7 December 2012	sler, Peter		
CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with anoth document of the same category A: technological background O: non-written disclosure P: intermediate document		E : earlier patent do after the filing dat D : document cited f L : document cited for & : member of the s	T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons &: member of the same patent family, corresponding document		

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EP 11 18 6013

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

07-12-2012

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
EP 2239775	A2	13-10-2010	CA EP JP US	2697870 2239775 2010245539 2010258270	A2 A	09-10-201 13-10-201 28-10-201 14-10-201
US 7891410	B1	22-02-2011	NONE			
EP 0385090	A1	05-09-1990	CA EP JP US	2009799 0385090 3040462 4923000	A1 A	03-09-199 05-09-199 21-02-199 08-05-199

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